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**TEK**

**Quick  
Reference**

070-8193-00  
Product Group 47

**THE  
11402A  
& 11403A**

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**DIGITIZING  
OSCILLOSCOPE**

*Please check for  
CHANGE INFORMATION  
at the rear of this manual*

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**Tektronix®**  
COMMITTED TO EXCELLENCE



## Instrument Serial Numbers

Each instrument manufactured by Tektronix has a serial number on a panel insert or tag, or stamped on the chassis. The first letter in the serial number designates the country of manufacture. The last five digits of the serial number are assigned sequentially and are unique to each instrument. Those manufactured in the United States have six unique digits. The country of manufacture is identified as follows:

B010000	Tektronix, Inc., Beaverton, Oregon, USA
E200000	Tektronix United Kingdom, Ltd., London
J300000	Sony/Tektronix, Japan
H700000	Tektronix Holland, NV, Heerenveen, The Netherlands

Instruments manufactured for Tektronix by external vendors outside the United States are assigned a two digit alpha code to identify the country of manufacture (e.g., JP for Japan, HK for Hong Kong, etc.).

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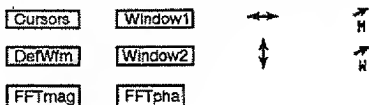
# Task Reference

This section of the Quick Reference lists common tasks you can perform using the 11402A and 11403A Digitizing Oscilloscopes, and the steps to take to execute each task. Tasks are sorted into groups.

## Key to symbols used in this reference:

-  a button on the front panel
-  a selection from the major menu area
-  a selection from a pop-up menu
-  an adjustment performed using the knobs

## Icons that appear on the display:



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# Basics

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## Clearing All Settings

 UTILITY,  Initialize

## Checking the ROM Version

 UTILITY,  Ident, *Read firmware versions in the pop-up menu under FW Vers.*



## Engaging Enhanced Accuracy

  ENHANCED ACCURACY

## Initializing the Scope

 UTILITY,  Initialize

## Removing Pop-Up Menus

*Touch anywhere in graticule outside pop-up menu. Alternate:  touch highlighted selector that displayed pop-up. Alternate:  press any menu button*

## Setting the Time and Date





 UTILITY,  Time & Date,  select item to change,  adjust using knobs

## Turning On the Scope




*Set rear panel Principal Power Switch to ON,  
Set  Standby to ON*

# Changing the Display

## Display Colors (11403A only)

 UTILITY,  Color,  select color to be set from top of pop-up, then use Hue, Lightness, and Saturation with  knobs. Select next color and continue. Previous Colors resets all colors to what they were when the pop-up was first displayed.





## Assigning Colors to Waveforms

Select waveform,  UTILITY,  Color,  Selected Wfm Color repeatedly until set to desired color. Window waveforms cannot be reassigned

## Resetting Colors




 UTILITY,  Color,  Default Color

## Display Intensity (overall)




 UTILITY,  Color,  Overall Intensity,  either knob

## Graticules




### Creating a Second Graticule

 WAVEFORM,  Graticules,  Create Second Graticule







### Moving Waveforms Between Graticules

 WAVEFORM,  Graticules,  Reduce to Single Graticule









### Removing the Second Graticule

 WAVEFORM,  Graticules,  Reduce to Single Graticule




## Changing Persistence Mode

 WAVEFORM,  Horizontal Desc,  Normal, Infinite Persist, or Variable Persist. *Alternate (11403A, Option 1S only):*  EXTENDED FEATURES,  Persist/Histograms,  Normal, Variable, Infinite, or Color Grading (*color grading can be selected only if both the Main and Window record length is set to 512 points*)

## Changing Persistence Time

 WAVEFORM,  Horizontal Desc,  Persist Time,  Either knob. *Alternate (11403A, Option 1S only):*  EXTENDED FEATURES  Persist/Histograms,  Persist Time,  Either knob

## Clearing Waveforms

Select waveform,  WAVEFORM,  Remove/Clear Wfm #,  Clear Wfm #

# Window Operations

## Creating a Window

Select source waveform,  or

## Removing a Window

Select window waveform to delete,

## Removing a Waveform

Select waveform to delete,

# Acquiring Waveforms

## Acquiring with Autoset

☐ AUTOSSET button. Alternate: Probe ID button, if set

## Applying Math Functions to a Waveform

☐ WAVEFORM, ☐ Vertical Desc, ☐ as needed then Enter Desc

## Create a New Waveform

☐ DefWfm and ☐ as needed (all waveforms). Alternate: ☐ Input channel (single-channel waveforms only)

## FFT Displays (11403A Only)

### Defining an FFT

☐ DefWfm, ☐ Page↓, FFTmag( or FFTphase, ☐ select the channel or define an arbitrary waveform, ☐ ) then Enter Desc. Alternate: Select the desired waveform, then FFTmag

### Frequency Span/div

↔, ☐ Top knob

### Frequency Resolution

↔, ☐ Bottom knob

### FFT Scaling

☐ UTILITY, ☐ Modes, ☐ FFT Scaling

### FFT Window

☐ UTILITY, ☐ Modes, ☐ FFT Window

# Displaying Waveforms

## Changing Vertical Controls

### Volts/Div (Vertical Size)

Select waveform,  $\uparrow$ ,  $\odot$  Top knob

### Vertical Position (Offset)

Select waveform,  $\uparrow$ ,  $\odot$  Bottom knob

## Changing Horizontal Controls

### Horizontal Position (Main Position)

Select waveform,  $\leftrightarrow$ ,  $\odot$  Bottom knob

### Time/Div (Main Size)

Select waveform,  $\leftrightarrow$ ,  $\odot$  Top knob

## Using Pan and Zoom

Select waveform,  $\leftrightarrow$ ,  $\equiv$  Pan/Zoom to On,  
 $\odot$  Top knob for magnification, Bottom knob for position

## Changing Trigger Settings

### Trigger Coupling

$\square$  TRIGGER,  $\equiv$  Trigger Select (Main or Window) then Coupling,  $\equiv$  select coupling method




### Trigger Level

$\overline{H}$  or  $\overline{H}$ ,  $\odot$  Top knob. Alternate:  $\square$  TRIGGER,  $\equiv$  Level,  $\odot$  Top knob



### Trigger Holdoff

$\overline{H}$  or  $\overline{H}$ ,  $\odot$  Bottom knob. Alternate:  $\square$  TRIGGER,  $\equiv$  Time Holdoff,  $\odot$  Bottom knob

## Trigger Source





 TRIGGER,  Trigger Select (Main or Window) *then* Source Desc,  *type description* *then* Enter Desc

## Trigger Slope





 TRIGGER,  Trigger Select (Main or Window) *then* Slope

## Setting Record Length

### Main Record Length

 WAVEFORM,  Horizontal Desc,  Main Record Length,  *Top knob*




### Window Record Length

 WAVEFORM,  Horizontal Desc,  Window Record Length,  *Bottom knob*




# Labeling Waveforms and Settings

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## Creating a Label

 UTILITY,  Label,  select entity to display (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors. Touch Display to display label. Exit

## Changing or Deleting the Label

 UTILITY,  Label,  select entity to change or delete (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors or delete text. Exit


## Positioning the Label

Select waveform,  UTILITY,  Label  Displayed Waveforms then Position,  to move



# **Making a Hardcopy**





## **Setting Hardcopy Parameters**

  UTILITY,  Hardcopy,  as necessary

## **Initiating a Hardcopy**

 HARDCOPY




## **Aborting a Hardcopy**

  UTILITY,  Hardcopy,  Hardcopy  
Abort






# Measurement Functions

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## Taking Measurements

 MEASURE,  Measurements,  *select measurement*




## Taking a Measurement on More than One Waveform

 MEASURE,  Measurements,  *select measurement*,  *select measurement*,  *Measured Waveform until desired waveform is assigned*





## Taking Measurements on Noisy or Jittery Waveforms

**Using Histograms**  
(11403A, Option 1S only)

 EXTENDED FEATURES,  Persist/Histograms,  Vertical Histogram or Horizontal Histogram

**Changing the Size of the Histogram Box** —  Persist/Histograms,  Vertical Limits or Horizontal Limits,  *Top or bottom knob as needed*





**Changing Histogram Scaling** —  Persist/Histograms,  Histogram Scaling

**Limiting Acquisitions** —  Persist/Histograms,  Set N Waveform or Set N Samples,  *Adjust either knob*,  Stop N Waveform or Stop N Samples






# Setting Up GPIB

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## Mode

  UTILITY,  GPIB,  Mode as *necessary*





## Address

  UTILITY,  GPIB,  Address  to *desired address*

## Terminator

  UTILITY,  GPIB,  Terminator as *necessary*


## Debug

  UTILITY,  GPIB,  Debug as *necessary*





# Setting RS-232-C Parameters

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## Baud Rate

  UTILITY,  RS232C,  Bottom knob





## Echo

  UTILITY,  RS232C,  Echo, as necessary





## Stop Bits

  UTILITY,  RS232C,  Stop Bits, as necessary

## Parity

  UTILITY,  RS232C,  Parity, as necessary





## Flagging

  UTILITY,  RS232C,  Flagging, as necessary

## Delay

  UTILITY,  RS232C,  Delay,  Top knob

## EOL String

  UTILITY,  RS232C,  EOL String, as necessary

## Verbose Mode

  UTILITY,  RS232C,  Verbose




## Debug Mode

  UTILITY,  RS232C,  Debug






# Storing Waveforms and Settings

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## Waveforms

 STORE/RECALL,  Store Waveform,  
 *select waveform or Store All*




## Settings

 STORE/RECALL,  Store Setting,  *select associated menu at bottom of pop-up menu, then Set Next FPS and*  *either knob, then*  Store Next FPS





# Using Diagnostics

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## Self-Test Diagnostics

  UTILITY,  Self Test

## Extended Diagnostics





  UTILITY,  Extended Diagnostic,  
 Extended Diagnostic *then run desired tests,*  
*then Exit, Exit*













# Command Reference

This section of the quick reference lists the functions you can perform using the 11402A and 11403A Digitizing Oscilloscopes, and the steps to take to execute each function. Functions are listed in alphabetical order.

## Key to symbols used in this reference:

-  a button on the front panel
-  a selection from the major menu area
-  a selection from a pop-up menu
-  an adjustment performed using the knobs

## Icons that appear on the display:



**A to B**, intensified zone  
see *Window*

**Abort Hardcopy**

UTILITY, Hardcopy, Hardcopy  
Abort

**AC Coupling**, trigger

TRIGGER, Trigger Select (Main or Window) then Coupling, AC

**AC Coupling**, vertical channel

WAVEFORM, Coupling, select channel then AC

**Acquiring Time Base** Main or Window

WAVEFORM, observe Horizontal Desc status area

**Acquisition**, on/off

DIGITIZER Run/Stop

**Add Waveform**

DefWfm and as needed (all waveforms), then Enter Desc. Alternate: Input channel (single-channel waveforms only)

**Address**, GPIB

UTILITY, GPIB, Address

**Annotation**, Measurement

MEASURE, selector displaying measurement value

**Area**, measurements

MEASURE, Measurements, Area + or Area-




**Assign Measurement**, assigning a measurement to a waveform

MEASURE, Measurements, select measurement, select measurement, Measured Waveform until desired waveform is assigned




**Audio Feedback**, on/off

UTILITY, Modes, Audio Feedback


**Auto Level Trigger Mode**

 TRIGGER,  Trigger Select (Main or Window) *then* Mode,  Auto Level




**Auto Trigger Mode**

 TRIGGER,  Trigger Select (Main or Window) *then* Mode,  Auto



**Autoset**

 AUTOSSET *button. Alternate: Probe ID button, if set*




**Autoset, set probe ID button**

 UTILITY,  Probes,  Wfm Select/New Wfm & Autoset

**Autoset, undo**

 UTILITY,  Modes,  Undo Last Autoset





**Autoset Options, configuring**

 UTILITY,  Modes,  Vertical and Horizontal

**Average, on/off**

 WAVEFORM,  Acquire Desc,  Average N

**Average, set N**

 WAVEFORM,  Acquire Desc,  Set AvgN,  Top knob




**Axis**

*see Graticule*





**B Sweep**

*see Window*





**Bandwidth Limit**

 WAVEFORM,  BW Limit,  select channel *then* select limit

**Baseline, default measurement parameter**

 MEASURE,  Stats Comp Test & Def,  Default Parameters *then* Baseline *then*  Bottom knob

## Baud Rate, RS-232-C

  UTILITY,  RS232C,  Baud Rate,  
⊙ Bottom knob




## Beeping, on/off

 UTILITY,  Modes,  Audio Feedback



## Brightness

*see Intensity*




## Calculations, waveform

 WAVEFORM,  Vertical Desc,  as needed then Enter Desc

## Calibrate (internal), oscilloscope

  ENHANCED ACCURACY




## Calibrate, probes

 UTILITY,  Probes, connect probe or input to calibrator and  select channel





## Channel Select

 Input channel. Alternate:  DerWfm,  as needed

## Clear, delete displayed or stored waveform

 STORE/RECALL,  Delete Waveform,  select individual waveform(s) or All Waveforms, Delete Selected Waveforms




## Clear, waveform data points

 STORE/RECALL,  Clear Waveform,  as needed. Alternate: Select waveform,  Remove/Clr Wfm #, Clear Wfm #

## Coarse, knob resolution

 Knob label,  Coarse

## Color, change waveform assignment

Select waveform,  UTILITY,  Color,  Selected Wfm Color repeatedly until set to desired color. Window waveforms cannot be re-assigned

## Color, default all (11403A only)

 UTILITY,  Color,  Default Color

**Color, default one (11403A only)**

☐ UTILITY, ☐ Color, ☐ select color to be reset from top of pop-up, then Default Color

**Color, set one or more (11403A only)**

☐ UTILITY, ☐ Color, ☐ select color to be set from top of pop-up, then use Hue, Lightness, and Saturation with ☐ knobs. Select next color and continue. Previous Colors resets all colors to what they were when the pop-up was first displayed.

**Color Grading, on/off**

(11403A, Option 1S only)

☐ EXTENDED FEATURES, ☐ Persist/Histograms, ☐ Color Grading. Note: both Main and Window record lengths must be set to 512 points to use the Color Grading mode.

**Color Grading, display scaling**

(11403A, Option 1S only)

☐ EXTENDED FEATURES, ☐ Color Grad Scale

**Communication parameters**

☐ ☐ UTILITY, ☐ RS232C or GPIB, ☐ as needed

**Compare, measurement on/off**

☐ MEASURE, ☐ Stats Comp Test & Def, ☐ Compare Options then Compare (on/off)

**Compare, set measurement reference value**

☐ MEASURE, ☐ Stats Comp Test & Def, ☐ Compare Options then Measure Selected Wfm Save as References or adjust by touching a measurement reference selector in "Adjust References" section, use ☐ either knob

**Compensation, probe**

☐ UTILITY, ☐ Probes, connect probe or input to calibrator and ☐ select channel




**Conditional Acquisition**

☐ WAVEFORM, ☐ Acquire Desc, ☐ %Fill Complete or Single Trigger or Continuous or Average Complete or Envelope Complete or Both Avg & Env





**Contrast**, default all (11402A only)

 UTILITY,  Intensity,  Default Contrast





**Contrast**, default one (11402A only)

 UTILITY,  Intensity,  select contrast to be reset from top of pop-up, then Default Contrast

**Contrast**, overall

 UTILITY,  Color (11403A) or Intensity (11402A),  Overall Intensity,  either knob




**Contrast**, set one or more (11402A only)

 UTILITY,  Intensity,  select contrast to be set from top of pop-up,  knobs. Select next contrast and continue. Previous Contrast resets all contrasts to what they were when the pop-up was first displayed.

**Copy**

*see Hardcopy*




**Coupling**, trigger

 TRIGGER,  Trigger Select (Main or Window) then Coupling,  as needed

**Coupling**, vertical channel

 WAVEFORM,  Coupling,  select channel then select coupling




**Create New Waveform**

 DerWfm and  as needed (all waveforms). Alternate:  Input channel (single-channel waveforms only)

**Cross**, measurement

 MEASURE,  Measurements,  Cross

**Cursors**, across two waveforms

Select first waveform,  Cursors,  Cursor Type,  Split Dots then selector for second waveform

**Cursors**, auto measurement area

*see Annotation, measurement*

**Cursors, setting type**

Select waveform, ☐ Cursors, ☐ Cursor Type,  
☐ select type

**Cursors, turning off**

☐ Page to Previous Menu. Alternate: ☐ WAVEFORM

**Cursors, turning on**

Select waveform, ☐ Cursors

**Data Interval, default measurement parameter**

☐ MEASURE, ☐ Stats Comp Test & Def,  
☐ Default Parameters *then* Data Interval

**Date, set**

☐ UTILITY, ☐ Time & Date, ☐ select item to change, ☐ knob

**DC Coupling, trigger**

☐ TRIGGER, ☐ Trigger Select (Main or Window) *then* Coupling, ☐ DC

**DC Coupling, vertical channel**

☐ WAVEFORM, ☐ Coupling, ☐ select channel *then* DC

**Debug Mode, programming**

☐ ☐ UTILITY, ☐ RS232C or GPIB, ☐ Debug

**Default, measurement parameter**

☐ MEASURE, ☐ Stats Comp Test & Def,  
☐ Default Parameters *then* select parameter,  
☐ knob

**Define, new waveform**

☐ DefWfm and ☐ as needed (all waveforms). Alternate: ☐ Input channel (single-channel waveforms only)




**Delay by Events or Time**

*see Holdoff*

**Delay, RS-232-C**

☐ ☐ UTILITY, ☐ RS232C, ☐ Delay,  
☐ Top knob




**Delay**, timing measurement

 MEASURE,  Measurements,  Delay



**Delayed Sweep**

*see Window*




**Delete**, displayed or stored waveform

 STORE/RECALL,  Delete Waveform,  
 *select individual waveform(s) or All Waveforms*, Delete Selected Waveforms




**Delete**, displayed waveform

*Select waveform to delete*,  Remove/Clr Wfm #,  Remove Wfm #





**Delete**, stored setting

 STORE/RECALL,  Delete Setting,  *select individual settings or All Settings*, Delete Selected Settings


**Deskew**, probe

 UTILITY,  Probes, *connect probe or input to calibrator and*  *select channel*





**Diagnostics**, extended

  UTILITY,  Extended Diagnostic,  
 *Extended Diagnostic then run desired tests then Exit*




**Diagnostics**, self test

  UTILITY,  Self Test





**Display Intensity**, adjustment

 UTILITY,  Color (11403A) or Intensity (11402A),  Overall Intensity,  *either knob*




**Display Mode**, vector on/off

 UTILITY,  Modes,  Vectored Waveforms




**Distal**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  
 *Default Parameters then Distal then*  *Top knob*

**Dot Cursors**

*Select waveform*,  *Cursors*,  Cursor Type,  
 Paired Dots

**Duty Cycle**, timing measurement

 MEASURE,  Measurements,  Duty Cycle

**Echo**, RS-232-C

  UTILITY,  RS232C,  Echo




**ECL**, Autoset mode

 UTILITY,  Modes,  Vertical




**Edge**, Autoset mode

 UTILITY,  Modes,  Horizontal



**Energy**, measurement

 MEASURE,  Measurements,  Energy




**Enhanced Accuracy**, set auto or manual

 UTILITY,  Modes,  Enhanced Accuracy Mode





**Enhanced Accuracy**, execute

  ENHANCED ACCURACY

**Envelope**, on/off

 WAVEFORM,  Acquire Desc,  Envelope N

**Envelope**, set N

 WAVEFORM,  Acquire Desc,  Set EnvN,  Bottom knob





**EOL String**, RS-232-C

  UTILITY,  RS232C,  EOL String




**Events**, delay window trigger by

*see Holdoff*

**Extended Diagnostics**




  UTILITY,  Extended Diagnostic,  Extended Diagnostic *then run desired tests then Exit*

**Extinction Ratio**, amplitude measurement

 MEASURE,  Measurements,  Extinction Ratio





**Fall Time**, timing measurement

 MEASURE,  Measurements,  Fall




**Fast** (definition)

*Integer waveform computations. See Forced to force High Prec floating-point computations.*




**FFT**, magnitude display (11403A only)

 DefWfm, FFTmag(, select channel,), Enter  
Desc. Alternate: Select waveform, 




**FFT**, phase display (11403A only)

 DefWfm, FFTphase(, select channel,), Enter  
Desc. Alternate: Select waveform, ,  





**FFT**, scaling (11403A only)

 UTILITY,  Modes, 



**FFT**, window (11403A only)

 UTILITY,  Modes, 

**Filter**, trigger coupling

 TRIGGER,  Trigger Select (Main or Window) then Coupling,  select desired coupling




**Fine**, knob resolution

 Knob label,  Fine




**Flagging**, RS-232-C

  UTILITY,  RS232C, 

**Forced**, high-precision waveform scaling

 UTILITY,  Modes,  Waveform Scaling  
to Forced (all new complex waveforms will be High Prec). See High Prec

**Frequency**, timing measurement

 MEASURE,  Measurements,  Frequency

**Front-Panel Setting**

see Setting

**Functions, waveform**

☐ WAVEFORM, ☐ Vertical Desc, ☐ as needed then Enter Desc

**Gain, amplitude measurement**

☐ MEASURE, ☐ Measurements, ☐ Gain

**GPIO Parameters**

☐ ☐ UTILITY, ☐ GPIO, ☐ as needed

**Graticule, create second**

☐ WAVEFORM, ☐ Graticules, ☐ Create Second Graticule

**Gray Shade, default all (11402A only)**

☐ UTILITY, ☐ Intensity, ☐ Default Contrast

**Gray Shade, default one (11402A only)**

☐ UTILITY, ☐ Intensity, ☐ select contrast to be reset from top of pop-up, then Default Contrast

**Gray Shade, set one or more (11402A only)**

☐ UTILITY, ☐ Intensity, ☐ select contrast to be set from top of pop-up, ☐ knobs. Select next contrast and continue. Previous Contrast resets all contrasts to what they were when the pop-up was first displayed.

**Hardcopy, abort**

☐ ☐ UTILITY, ☐ Hardcopy, ☐ Hardcopy Abort

**Hardcopy, make**

☐ HARDCOPY

**Hardcopy, set mode**

☐ ☐ UTILITY, ☐ Hardcopy, ☐ as necessary

**High Pass Filter, trigger coupling**





☐ TRIGGER, ☐ Trigger Select (Main or Window) then Coupling, ☐ select coupling

**High Prec (definition)**

*Floating-point waveform computations. All waveforms using multiplication, division, or certain functions will always be High Prec. Other waveforms can be High Prec — see Forced*




## Histograms, adjusting limits

(11403A, Option 1S only)




-  EXTENDED FEATURES,  Persist/Histograms,  Vertical Limits or Horizontal Limits,  either knob as appropriate

## Histograms, on/off




(11403A, Option 1S only)

-  EXTENDED FEATURES,  Persist/Histograms,  Vertical Histogram or Horizontal Histogram






## Holdoff window trigger by events, establishing

-  TRIGGER,  Window Holdoff Md,  Holdoff by Events Triggered from Window




## Holdoff window trigger by time, establishing

-  TRIGGER,  Window Holdoff Md,  Holdoff by Time Triggered from Window




## Holdoff window trigger by time or events, adjusting

-   Bottom knob. Alternate:  TRIGGER,  Time Holdoff or Events Holdoff,  Bottom knob

## Holdoff, window trigger, removing




-  TRIGGER,  Window Holdoff Md,  No Holdoff Triggered from Main

## Horizontal Bar Cursors




- Select waveform,  Cursors,  Cursor Type,  Horizontal Bars

## Horizontal Histograms, on/off



(11403A, Option 1S only)

-  EXTENDED FEATURES,  Persist/Histograms,  Horizontal Histogram


## Horizontal Magnify

- Select waveform,   Pan/Zoom to On,  Top knob for magnification, Bottom knob for position

## Horizontal Position

- Select waveform,   Bottom knob

## Horizontal Size

- Select waveform,   Top knob

## Impedance, Signal

☐ WAVEFORM, ☐ Impedance, ☐ select channel then select impedance

## Infinite Persistence, on/off (11403A only)

☐ WAVEFORM, ☐ Horizontal Desc, ☐ Infinite Persist. Alternate (Option 1S only):

☐ EXTENDED FEATURES, ☐ Persist/Histograms, Infinite

## Initialize, all default measurement parameters

☐ MEASURE, ☐ Stats Comp Test & Def, ☐ Default Parameters then Initialize Defaults

## Initialize oscilloscope

☐ UTILITY, ☐ Initialize

## Intensified Zone

see Window

## Intensity, default all (11402A only)

☐ UTILITY, ☐ Intensity, ☐ Default Contrast

## Intensity, default one (11402A only)

☐ UTILITY, ☐ Intensity, ☐ select contrast to be reset from top of pop-up, then Default Contrast

## Intensity, overall display

☐ UTILITY, ☐ Color (11403A) or Intensity (11402A), ☐ Overall Intensity, ☐ either knob

## Intensity, set one or more (11402A only)

☐ UTILITY, ☐ Intensity, ☐ select contrast to be set from top of pop-up, ☐ knobs. Select next contrast and continue. Previous Contrast resets all contrasts to what they were when the pop-up was first displayed.



## Inverted Waveform

☐ DefWfm, ☐ -, then source description then Enter Desc

## Jitter, timing measurement (11403A, Option 1S only)

☐ MEASURE, ☐ Measurements, ☐ Jitter (only with Color Grading on)




## Keypad, numeric

 Knob label,  enter number, magnitude (m for milli, etc.) then Enter




## Knob Resolution

 Knob label,  Coarse or Medium or Fine

## Label, define and display

 UTILITY,  Label,  select entity to display (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors, then Display, Exit

## Label, change or delete

 UTILITY,  Label,  select entity to change or delete (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors or delete text. Exit




## Label, move

Select waveform,  UTILITY,  Label,  Displayed Waveforms then Position,  to move





## Label, on/off

 UTILITY,  Label  Displayed Waveforms then Display, then Exit






## Label, stored waveform time/date

 UTILITY,  Modes,  Stored Wfm Time/Date (shows time/date stamp on menu selectors for stored waveforms)

## Left Limit, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Left Limit,  Top knob

## Level, trigger

 M or H,  Top knob. Alternate:  TRIGGER,  Level,  Top knob

**Level Mode**, default measurement parameter

- ☐ MEASURE, ☐ Stats Comp Test & Def,
- ☐ Default Parameters then Level Mode

**Line Trigger**

- ☐ TRIGGER, ☐ Trigger Select (Main or Window) then Source Desc, ☐ Line, Enter Desc

**Low Pass Filter**, trigger coupling

- ☐ TRIGGER, ☐ Trigger Select (Main or Window) then Coupling, ☐ select coupling

**Main Position**

Select waveform,  $\leftrightarrow$ , ☐ Bottom knob

**Main Size**

Select waveform,  $\leftrightarrow$ , ☐ Top knob

**Main→Win Trigger**, timing measurement

- ☐ MEASURE, ☐ Measurements,
- ☐ Main→Win Trig Time

**Main**, record length

- ☐ WAVEFORM, ☐ Horizontal Desc, ☐ Main Record Length, ☐ Top knob

**Mask Testing**, clear hits  
(11403A, Option 1S only)

- ☐ EXTENDED FEATURES, ☐ Mask Testing,
- ☐ Clear Hits

**Mask Testing**, creating masks  
(11403A, Option 1S only)

- ☐ EXTENDED FEATURES, ☐ Mask Testing,
- ☐ select a Mask # selector, select Edit Mask Definition, ☐ both knobs to specify a mask point, ☐ Add Point, add points as necessary,
- ☐ Exit Mask Editing.

**Mask Testing**, deleting masks  
(11403A, Option 1S only)

- ☐ EXTENDED FEATURES, ☐ Mask Testing,
- ☐ Mask # for the mask to be deleted, Delete Mask Definition

**Mask Testing**, on/off  
(11403A, Option 1S only)

- ☐ EXTENDED FEATURES, ☐ Mask Testing,
- Count Mask Hits



**Mask Testing**, set N mask hits  
(11403A, Option 1S only)

 EXTENDED FEATURES,  Mask Testing,  
 Mask #, Set N Mask Hits,  *either knob*




**Mask Testing**, set N waveforms  
(11403A, Option 1S only)

 EXTENDED FEATURES,  Mask Testing,  
 Mask #, Set N Waveforms,  *either knob*




**Mask Testing**, stop counting hits after N mask hits  
(11403A, Option 1S only)

 EXTENDED FEATURES,  Mask Testing,  
 Mask #, Stop N Mask Hits

**Mask Testing**, stop counting hits after N total hits  
(11403A, Option 1S only)

 EXTENDED FEATURES,  Mask Testing,  
 Mask #, Stop N Total Hits (*N is defined by Set N Mask Hits value*)




**Mask Testing**, stop counting hits after N wave-  
forms (11403A, Option 1S only)

 EXTENDED FEATURES,  Mask Testing,  
 Mask #, Stop N Waveforms




**Max**, amplitude measurement

 MEASURE,  Measurements,  Max




**Mean**, amplitude measurement

 MEASURE,  Measurements,  Mean




**Measured Waveform**, assigning a measurement  
to a waveform

 MEASURE,  *select measurement*,  
 Measured Waveform *until measurement is*  
*"assigned" to desired waveform*




**Measurement**, to remove all

 MEASURE,  Measurements,  Delete  
All





**Measurement**, to select

 MEASURE,  Measurements,  *select*  
*up to six*






**Measurement Compare**, on/off

 MEASURE,  Stats Comp Test & Def,  
 Compare Options *then Compare (on/off)*




**Measurement Compare**, set compare value

 MEASURE,  Stats Comp Test & Def,  
 Compare Options *then* Measure Selected  
 Wfm Save as References or *adjust by touching*  
*a measurement reference selector in "Adjust*  
*References" section, use*  *either knob*





**Measurement Statistics**, on/off

 MEASURE,  Stats Comp Test & Def,  
 Statistics  
*Note: Main→Win Trig Time measurement has*  
*its own statistics control:*  Main→Win Trig  
 Time,  "Statistics" section



**Measurement Statistics**, restart logging

 MEASURE,  Stats Comp Test & Def,  
 Reset



**Measurement Statistics**, set N

 MEASURE,  Stats Comp Test & Def,  
 Statistics N,  *either knob*





**Medium**, knob resolution

 Knob label,  Medium

**Menu**, remove pop-up

*Touch anywhere in graticule outside pop-up*  
*menu. Alternate:*  *touch highlighted selector*  
*that displayed pop-up. Alternate:*  *press any*  
*menu button*

**Mesial**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  
 Default Parameters *then* Mesial,  *Top knob*

**Mid**, amplitude measurement

 MEASURE,  Measurements,  Mid




**Min**, amplitude measurement

 MEASURE,  Measurements,  Min

**Mode**, GPIB




  UTILITY,  GPIB,  Mode

**Move Waveform** to Other Graticule




*Select waveform to move,*  WAVEFORM,  
 Upper Graticule or Lower Graticule,  
 Move Waveform to Other Graticule






## New Waveform

 and  as needed (all waveforms). Alternate:  Input channel (single-channel waveforms only)

## Noise, amplitude measurement (11403A, Option 1S only)

 MEASURE,  Measurements,  Noise  
(only with Color Grading on)



## Noise Filter, trigger coupling

 TRIGGER,  Trigger Select (Main or Window) then Coupling,  select coupling



## Normal Trigger Mode

 TRIGGER,  Trigger Select (Main or Window) then Mode,  Normal




## Numeric Keypad

 Knob label,  enter number, magnitude (m for mill, etc.) then Enter




## Offset, vertical position

Select waveform, ,  Bottom knob




## Optional, fast or high-precision waveform scaling

 UTILITY,  Modes,  Waveform Scaling to Optional (new waveforms will be Fast or High Prec depending on calculations invoked.)




## Overshoot, amplitude measurement

 MEASURE,  Measurements,  Over-shoot




## Pan and Zoom, multiple waveforms

 UTILITY,  Modes,  Multitrace Pan/Zoom, then use Pan/Zoom as with single waveforms

## Pan and Zoom, set pivot (center of magnification)

 UTILITY,  Modes,  Pan/Zoom Pivot




## Pan and Zoom, using

Select waveform, ,  Pan/Zoom to On,  Top knob for magnification, Bottom knob for position




**Parity, RS-232-C**

  UTILITY,  RS232C,  Parity

**Peak to Peak, amplitude measurement**

 MEASURE,  Measurements,  Peak-Peak




**Peak to Peak, Pk-Pk Autoset mode**

 UTILITY,  Modes,  Vertical







**Period, Autoset mode**

 UTILITY,  Modes,  Horizontal




**Period, timing measurement**

 MEASURE,  Measurements,  Period



**Persistence Mode, on/off**

 WAVEFORM,  Horizontal Desc,  Infinite Persist or Variable Persist to turn on or Normal to turn off. Alternate (11403A, Option 1S only):  EXTENDED FEATURES,  Persist/Histograms,  as desired



**Phase, timing measurement**

 MEASURE,  Measurements,  Phase



**Pop-Up Menu, remove**

*Touch anywhere in graticule outside pop-up menu. Alternate:  touch highlighted selector that displayed pop-up. Alternate:  press any menu button*



**Position, horizontal**

Select waveform, ,  Bottom knob




**Position, vertical (offset)**

Select waveform, ,  Bottom knob




**Pre-Trigger View**

Select waveform, ,  Bottom knob






**Probe ID Button, set function**

 UTILITY,  Probes,  Wfm Select/New Wfm or Wfm Select/New Wfm & Autoset or Sequence Settings





**Probes**, calibrate (deskew, compensate)

 UTILITY,  Probes, connect probe or input to calibrator and  select channel

**Propagation Delay**, timing measurement

 MEASURE,  Measurements,  PropDelay,  PropDelay,  select delayed waveform from top of menu

**Proximal**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Proximal then  Bottom knob




**Pulse**, Autoset mode

 UTILITY,  Modes,  Horizontal




**Pulse Width**, timing measurement

 MEASURE,  Measurements,  Width

**Recall**, stored setting

 STORE/RECALL,  Recall Setting,  select setting





**Recall**, stored waveform

 STORE/RECALL,  Recall Waveform,  select waveform





**Record Length**, set by Initialize

 UTILITY,  Modes,  Init Sets Rec Len To





**Record Length**, main

 WAVEFORM,  Horizontal Desc,  Main Record Length,  Top knob





**Record Length**, window

 WAVEFORM,  Horizontal Desc,  Window Record Length,  Bottom knob

**Reference Level**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Reference Level then  either knob

## Reference Value, for measurement compare

 MEASURE,  Stats Comp Test & Def,  Compare Options *then* Measure Selected Wfm Save as References *or adjust by touching a measurement reference selector in "Adjust References" section, use*  *either knob*



## Remove Waveform

Select waveform to delete,  Remove/Clr Wfm #,  Remove Wfm #



## Remove Window

Select window waveform to delete,  Remove/Clr Wfm #,  Remove Wfm #




## Remove, pop-up menu

Touch anywhere in graticule outside pop-up menu. Alternate:  touch highlighted selector that displayed pop-up. Alternate:  press any menu button

## Reset Oscilloscope

 UTILITY,  Initialize





## Reset, all default measurement parameters

 MEASURE,  Stats Comp Test & Def,  Default Parameters *then* Initialize Defaults




## Reset, waveform measurement parameters to defaults

Select waveform,  MEASURE,  Stats Comp Test & Def,  Default Parameters *then* Copy Defaults to Sel Wfm

## Right Limit, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters *then* Right Limit,  Bottom knob

## Rise Time, timing measurement

 MEASURE,  Measurements,  Rise

## RMS, amplitude measurement

 MEASURE,  Measurements,  RMS




## RS-232-C Parameters

  UTILITY,  RS232C,  as needed




### Runs After Delay

 TRIGGER,  Window Holdoff Md,  No Holdoff Triggered from Main






### Sample Interval, display

 WAVEFORM,  Horizontal Desc,  read out at top of pop-up menu




### Save Current Measurement Values as Compare Reference

 MEASURE,  Stats Comp Test & Def,  Compare Options *then* Measure Selected Wfm Save as References




### Save Setting

 STORE/RECALL,  Store Setting,  select associated menu at bottom of pop-up menu, *then* Set Next FPS and  either knob, *then*  Store Next FPS



### Save Waveform

 STORE/RECALL,  Store Waveform,  select waveform or Store All

### Scaling, waveform

 UTILITY,  Modes,  Waveform Scaling. See also *Fast and High Prec*





### Select Waveform

*Touch waveform on display. Alternate:*  WAVEFORM,  Page to All Wfms Status *then* select waveform in major menu area




### Self Test

  UTILITY,  Self Test,  Self Test




### Self Test, extended diagnostics

  UTILITY,  Extended Diagnostic,  Extended Diagnostic *then* run desired tests *then* Exit





### Setting, recall front panel setup

 STORE/RECALL,  Recall Setting,  select setting




**Setting**, sequence to next

 STORE/RECALL,  Sequence Settings,  Sequencing (set to On) then Next Setting.  
*Alternate: press probe button if ID function is set to sequence setting (see Probe ID Button)*





**Setting**, store front panel setup

 STORE/RECALL,  Store Setting,  select menu to be stored with setting at bottom of pop-up menu, then Set Next FPS and  either knob, then Store Next FPS



**Signal Source**

 and  as needed (all waveforms). *Alternate:  Input channel (single-channel waveforms only)*



**Signal/Noise Ratio**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters then S/N Ratio,  Bottom knob




**Size**, adjust horizontal

Select waveform, ,  Top knob




**Size**, adjust vertical

Select waveform, ,  Top knob

**Skew**, timing measurement

 MEASURE,  Measurements,  Skew

**Slope**, default measurement parameter

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Slope




**Slope**, trigger

 TRIGGER,  Trigger Select (Main or Window) then Slope




**Sound**, on/off

 UTILITY,  Modes,  Audio Feedback




**Source**, signal

 and  as needed (all waveforms). *Alternate:  Input channel (single-channel waveforms only)*




### Source, trigger



 TRIGGER,  Trigger Select (Main or Window) then Source Desc,  type description then Enter Desc

### Split Dot Cursors




Select first waveform,  Cursors,  Cursor Type,  Split Dots then touch selector for second waveform

### Statistics, on/off





 MEASURE,  Stats Comp Test & Def,  Statistics Options, Statistics

*Note: Main→Win Trig Time measurement has its own statistics control:  Main→Win Trig Time,  "Statistics" section*



### Statistics, restart logging

 MEASURE,  Stats Comp Test & Def,  Reset

### Statistics, set N

 MEASURE,  Stats Comp Test & Def,  Statistics Options, Statistics N,  either knob






### Status, waveform

 WAVEFORM,  Vertical Desc selector shows some status or Page to All Wfms Status




### Stop Bits, RS-232-C

  UTILITY,  RS232C,  Stop Bits




### Store Setting

 STORE/RECALL,  Store Setting,  select associated menu at bottom of pop-up menu, then Set Next FPS and  either knob, then  Store Next FPS




### Store Waveform

 STORE/RECALL,  Store Waveform,  select waveform or Store All

### Stored Waveform, recall

 STORE/RECALL,  Recall Waveform,  select waveform





**Stored Waveform, time/date label**

 UTILITY,  Modes,  Stored Wfm Time/Date (*shows time/date stamp on menu selectors for stored waveforms*)




**Terminator, GPIB**

  UTILITY,  GPIB,  Terminator



**Time, delay window trigger by**  
*see Holdoff***Time, set**

 UTILITY,  Time & Date,  select item to change,  adjust using knobs



**Time A→B, timing measurement**

 MEASURE,  Measurements,  Main→Win Trig Time



**Time/Div**

Select waveform, ,  Top knob




**Time Base Position**

Select waveform, ,  Bottom knob





**Time Base Size**

Select waveform, ,  Top knob


**Time Mode, default measurement parameter**

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Time Mode




**Topline, default measurement parameter**

 MEASURE,  Stats Comp Test & Def,  Default Parameters then Topline then  Top knob

**Touch Panel, on/off**

 TOUCH PANEL

**Tracking, default measurement parameter**




 MEASURE,  Stats Comp Test & Def,  Default Parameters then Tracking

**Trig After Delay**

 TRIGGER,  Window Holdoff Md,  Holdoff by Time Triggered from Window






**Trigger Time Delay**, timing measurement

 MEASURE,  Measurements,  
 Main→Win Trig Time

**Trigger**, AC coupling

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Coupling,  AC

**Trigger**, auto level mode

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Mode,  Auto Level




**Trigger**, auto mode

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Mode,  Auto




**Trigger**, DC coupling

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Coupling,  DC




**Trigger**, high pass filter coupling

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Coupling,  select







**Trigger holdoff window by events**, establishing

 TRIGGER,  Window Holdoff Md,  
 Holdoff by Events Triggered from Window




**Trigger holdoff window by time**, establishing

 TRIGGER,  Window Holdoff Md,  
 Holdoff by Time Triggered from Window







**Trigger holdoff window by time or events**, adjusting

 or ,  Bottom knob. Alternate:  TRIGGER,  
 Time Holdoff or Events Holdoff,  Bottom  
knob




**Trigger**, holdoff window, removing

 TRIGGER,  Window Holdoff Md,  No  
Holdoff Triggered from Main

**Trigger**, level

 or ,  Top knob. Alternate:  TRIGGER,  
 Level,  Top knob

**Trigger**, line

 TRIGGER,  Trigger Select (Main or Win-  
dow) then Coupling,  Line

**Trigger, low pass filter coupling**

☐ TRIGGER, ☐ Trigger Select (Main or Window) then Coupling, ☐ select coupling

**Trigger, noise filter coupling**

☐ TRIGGER, ☐ Trigger Select (Main or Window) then Coupling ☐, select coupling

**Trigger, normal mode**

☐ TRIGGER, ☐ Trigger Select (Main or Window) then Mode, ☐ Normal

**Trigger, single shot**

☐ WAVEFORM, ☐ Acquire Desc, ☐ Single Trigger (press ☐ DIGITIZER for each successive acquisition)

**Trigger, slope**

☐ TRIGGER, ☐ Trigger Select (Main or Window) then Slope

**Trigger, source**

☐ TRIGGER, ☐ Trigger Select (Main or Window) then Source Desc, ☐ type description then Enter Desc

**Trigger window holdoff by events, establishing**

☐ TRIGGER, ☐ Window Holdoff Md, ☐ Holdoff by Events Triggered from Window

**Trigger window holdoff by time, establishing**

☐ TRIGGER, ☐ Window Holdoff Md, ☐ Holdoff by Time Triggered from Window

**Trigger window holdoff by time or events, adjusting**

☐ ☐ Bottom knob. Alternate: ☐ TRIGGER, ☐ Time Holdoff or Events Holdoff, ☐ Bottom knob

**Trigger, window holdoff, removing**

☐ TRIGGER, ☐ Window Holdoff Md, ☐ No Holdoff Triggered from Main

**TTL, Autoset mode**

☐ UTILITY, ☐ Modes, ☐ Vertical

**Undershoot**, amplitude measurement

☐ MEASURE, ☐ Measurements, ☐ Under-  
shoot

**Variable Persistence**, on/off

☐ WAVEFORM, ☐ Horizontal Desc, Variable  
Persist. *Alternate (11403A, Option 1S only):*  
☐ EXTENDED FEATURES, ☐ Persist/Histo-  
grams, ☐ Variable Persist

**Vector Mode**, display mode on/off

☐ UTILITY, ☐ Modes, ☐ Vectored Waveforms

**Verbose**, RS-232-C

☐ ☐ UTILITY, ☐ RS232C, ☐ Verbose

**Vertical Bar Cursors**

Select waveform, ☐ Cursors, ☐ Cursor Type,  
☐ Vertical Bars

**Vertical Offset**

Select waveform, ☐ ☐ Bottom knob

**Vertical Size**

Select waveform, ☐ ☐ Top knob

**Volts/Div**

Select waveform, ☐ ☐ Top knob

**Waveform**, calculations and functions

☐ WAVEFORM, ☐ Vertical Desc, ☐ as need-  
ed then Enter Desc

**Waveform**, clear data points

☐ STORE/RECALL, ☐ Clear Waveform,  
☐ as needed. *Alternate: Select waveform, Re-  
move/Clr Wfm #, Clear Wfm #*




**Waveform**, create new

☐ DefWfm and ☐ as needed (all waveforms). *Al-  
ternate: ☐ Input channel (single-channel  
waveforms only)*



**Waveform**, move to other graticule

~ Select waveform to move, ☐ WAVEFORM,  
☐ Upper Graticule or Lower Graticule,  
☐ Move Waveform to Other Graticule

## Waveform, recall stored

 STORE/RECALL,  Recall Waveform,  
 select waveform



## Waveform, remove

Select waveform to delete,  Remove/Clr Wfm  
#,  Remove Wfm #



## Waveform, scaling

 UTILITY,  Modes,  Waveform Scaling.  
See also Fast and High Prec




## Waveform, select

Touch waveform on display. Alternate:  WA-  
VEFORM,  Page to All Wfms Status then  
select waveform in major menu area




## Waveform, status

 WAVEFORM,  Vertical Desc selector  
shows some status or Page to All Wfms Status




## Waveform, store

 STORE/RECALL,  Store Waveform,  
 select waveform or Store All




## Waveform, vertical description

 WAVEFORM,  Vertical Desc (shows some  
status),  extend or modify as needed then  
Enter Desc




## Waveform, XY from two live waveforms

Create and select Y waveform,  WAVEFORM,  
 Horizontal Desc,  select X waveform




## Waveform, XY from two stored waveforms

Create and select stored Y waveform,  WA-  
VEFORM,  Horizontal Desc,  select X  
stored waveform




## Waveform Color, change assignment (11403A only)

Select waveform,  UTILITY,  Color,  Se-  
lected Wfm Color repeatedly until set to desired  
color. Window waveforms cannot be reas-  
signed. Note: see Color for more color control





**Waveform Label, define**

 UTILITY,  Label,  select entity to display (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors. Exit




**Waveform Label, change or delete**

 UTILITY,  Label,  select entity to change or delete (first Displayed Waveforms, Stored Waveforms, or Stored Settings, then the entity from the list below), then type label (from key list of Upper Case, Lower Case, or Numbers). Back Space to correct errors or delete text. Exit




**Waveform Label, move**

Select waveform,  UTILITY,  Label  Displayed Waveforms then Position, then Exit,  to move



**Waveform Label, on/off**

 UTILITY,  Label  Displayed Waveforms then Display



**Waveform Label, stored waveform time/date**

 UTILITY,  Modes,  Stored Wfm Time/Date (shows time/date stamp on menu selectors for stored waveforms)

**Window Position**

Select waveform, ,  Bottom knob





**Window Size**

Select waveform, ,  Top knob

**Window, create new waveform**




Select source waveform,  Window1 or  Window2




**Window, record length**






 WAVEFORM,  Horizontal Desc,  Window Record Length,  Bottom knob




**Window, remove**




Select window waveform to delete,  Remove/Clr Wfm #,  Remove Wfm #




**Window**, trigger holdoff by events, establishing  
 TRIGGER,  Window Holdoff Md,  
 Holdoff by Events Triggered from Window

**Window**, trigger holdoff by time, establishing  
 TRIGGER,  Window Holdoff Md,  
 Holdoff by Time Triggered from Window

**Window**, trigger holdoff by time or events, adjusting  
,  *Bottom knob. Alternate:*  TRIGGER,  
 Time Holdoff or Events Holdoff,  *Bottom knob*

**Window**, trigger holdoff, removing  
 TRIGGER,  Window Holdoff Md,  No  
 Holdoff Triggered from Main

**XY Waveform**, from two live waveforms  
*Create and select Y waveform,*  WAVEFORM,  
 Horizontal Desc,  *select X waveform*

**XY Waveform**, from two stored waveforms  
*Create and select stored Y waveform,*  WA-  
 VEFORM,  Horizontal Desc,  *select X  
 stored waveform*



# Tektronix 11402A/11403A

## Alphabetic Command Summary

< >	::= Defined item
{ }	::= One item from group required
[ ]	::= Optional item(s)
( )	::= Response to a query
	::= Exclusive or
FPS	::= Front Panel Setting
<NR1>	::= Signed integer
<NR2>	::= Floating point, no exponent
<NR3>	::= Floating point with exponent
<NRx>	::= {<NR1>   <NR2>   <NR3> }
<ui>	::= Unsigned integer
<curve data>	::= Tek Codes&Formats binary block data (<bblock>) or ASCII data points (<NR1> [{, <NR1> }...])
<qstring>	::= Quoted string
?	::= Query-only header or link

HEAdEr	Header, link, or argument; minimum spelling in <b>CAPs</b>
RESPonse	Query response; minimum spelling in <b>CAPs</b>

Commands are set/query unless otherwise noted. Query-only headers are followed by a ?. Query-only links are indicated with a leading ?; the argument(s) in parentheses after the colon show the response form. (Note: Do not enter the colon when querying a link.)

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## A-B

**ABBwfmpre** {ON|OFF}  
**ABStouch** {CLEAR|<NRx>, <NRx> }  
**ADJtrace** <ui> <link>: <arg>  
     **HMAg**: <NRx>  
     **HPOsition**: <NRx>  
     **HVPosition**: <NRx>  
     **HVSize**: <NRx>  
     **PANzoom**: {ON|OFF}  
     **TRSep**: <NRx>  
     **VPOsition**: <NRx>  
     **VSize**: <NRx>  
**ALTinkjet** <link>: <arg>  
     **DIREction**: {HORIZ|VERT}  
     **FORMat**: {DRAft|HIREs|REDUCed}  
     **PORT**: {CENTRONics|GPIB|RS232}  
**AUTOSet** [ <link>: ] <arg>  
     **HORIZ**: {EDGE|OFF|PERIOD|PULSE}  
     **START**  
     **UNDO**  
     **VERT**: {ECL|PP|TTL|OFF}  
**AVG** {ON|OFF}  
**BASeline** <NRx>  
**BELL**  
**BITMap** <link>: <arg>  
     **DATACompress**: {ON|OFF}

(Set-only)  
(Set-only)



DATAFormat: {BINary|BINHex}  
 DIREction: {HORiz|VERT}  
 FORMat: {DIThered|DRAft|HIRes|REDuced|SCREen}  
 PORT: {CENTRONics|GPIb|RS232}  
 BYT.or {LSB|MSB}

C

CALProbe <link>:<arg>  
   FULL: <slot> <ui>  
   SHORT: <slot> <ui>  
 CALStatus?  
 CCAIconstants <ui>:<NRx>  
 CH <slot> <ui> <link>:<arg>  
   AMPoffset: <NRx>  
   BW: <NRx>  
   BWHi: <NRx>  
   BWLo: <NRx>  
   COUpling: {AC|DC|VC|OFF}  
   IMPedance: <NRx>  
   MNSCoupling: {AC|DC|VC|OFF}  
   MNSOffset: <NRx>  
   ? MNSProbe (<qstring>)  
   OFFSet: <NRx>  
   PLSCoupling: {AC|DC|VC|OFF}  
   PLSOffset: <NRx>  
   ? PLSProbe (<qstring>)  
   ? PROBE (<qstring>)  
   PROTect: {ON|OFF}  
   SENSitivity: <NRx>  
   ? UNITS (<qstring>)  
   VCOffset: <NRx>  
 CLEar {ALL| <qstring>|TRACE <ui>} (Set-only)  
 COLor <ui> <link>:<arg>  
   DEFAULT  
   HUE: <NRX>  
   LIGHTness: <NRx>  
   SATuration: <NRx>  
 COLor DEFAULT  
 COMpare {ON|OFF}  
 CONDacq <link>:<arg>  
   FIL: <NRx>  
   ? REMAINing (<NR1>)  
   TYPE: {AVG|BOTH|CONTInuous|ENV|FIL|GRADED|  
   HIST.pt|MASK [<ui>]|SINGLE|WAVfrm}  
 CONFig?  
 COPY [<link>:]<arg>  
   ABORT (Set-only)  
   FORMat: {DIThered|DRAft|HIRes|REDuced|SCREen}  
   PORT: {CENTRONics|GPIb|RS232}  
   PRINTER: {ALTinkjet|BITMap|HPG|PIN8|PIN24|  
   TEK4697|TEK4696|TEK4692}  
   START (Set-only)  
   ? STATUS ({IDLE|SPOoling|PRINTing|ABORTing})  
 CPLugin <qstring>  
 CURSor <link>:<arg>  
   READout: {ON|OFF}  
   REFERENCE: TRACE <ui>  
   TYPE: {HBArS|PAIred|SPLit|VBArS}  
   ? XUNIT ({AMPs|DIVS|DEGrees|DBM|HERtz|  
   OHMs|SEConds|VOLts|WATts})  
   ? YUNIT ({AMPs|DIVS|DEGrees|DBM|HERtz|  
   OHMs|VOLts|WATts})  
 CURVe <curve data>

**DAInt** { **SINGLE**|**WHOLE** }  
**DATE** <qstring> = "<dd>-<mon>-<yy>"  
**DEBug** <link>:<arg>  
     **GPiB**: {**ON**|**OFF**}  
     **RS232**: {**ON**|**OFF**}  
**DEF** <qstring>,<qstring> (Set-only)  
**DELAy** [<ui>]?  
**DELeTe** [<link>:]<arg> (Set-only)  
     {**FPS**<ui>|<qstring>|**STO**<ui>|**MENU**<ld>}  
     **ALL**: {**FPS**|**MENU**|**STO**}  
**DIAG**?  
**DIGitizer** {**RUN**|**STOP**}  
**DISPErson** {**PP**|**RMSDev**}  
**DISPlay** <link>:<arg>  
     **C.WINBottom**: <NRx>  
     **C.WINLeft**: <NRx>  
     **C.WINRight**: <NRx>  
     **C.WINTop**: <NRx>  
     **D.WINBottom**: <NRx>  
     **D.WINLeft**: <NRx>  
     **D.WINRight**: <NRx>  
     **D.WINTop**: <NRx>  
     ? **DATA** (<curve data>)  
     **GRADFirst**: {**ON**|**OFF**}  
     ? **GRADScale** (<ui>)  
     **GRAticule**: {**DUAL**|**SINGLE**}  
     **INTENsity**: <NRx>  
     **MODE**: {**DOTs**|**VECTors**}  
     ? **NR.PT** (<ui>)  
     **PERSistence**: <NRx>  
     **REFREsh**: <NRx>  
     **STATistics**: {**HISTogram**|**MASK**}  
     **TYPE**: {**GRADED**|**INFinite**|**NORMAL**|**VARIABLE**}  
     ? **XSize** (<ui>)  
     ? **YSize** (<ui>)  
**DISTal** <NRx>  
**DLYtrace** **TRAcE** <ui>  
**DOT1Abs**, **DOT2Abs** <link>:<arg>  
     **PCTg**: <NRx>  
     **XCOord**: <NRx>  
     **XDiv**: <NRx>  
     ? **XQUal** ({**EQ**|**LT**|**GT**|**UN**})  
     ? **YCOord** (<NR3>)  
     ? **YDiv** (<NR3>)  
     ? **YQUal** ({**EQ**|**LT**|**GT**|**UN**})  
**DOT1Rel**, **DOT2Rel** <link>:<arg> (Set-only)  
     **PCTg**: <NRx>  
     **XCOord**: <NRx>  
     **XDiv**: <NRx>  
**DSYmenu** [<link>:]<arg>  
     {**ALL** **Wavfrm**|**CURSor**|**DISPlay**|**EXTFeatures**|  
       **MEAS**|**STORE** **Recall**|**TRigger**|**UTILITY1**|  
       **UTILITY2**|**WAVfrm**|<link>:<arg>}  
     **EXTMenu**: {**MENU**<ld>|**NONE**}

**ENCdg** <link>:<arg>  
     **DISPlay**: {**ASCIi**|**BINary**}  
     **HISTogram**: {**ASCIi**|**BINary**}  
     **SET**: {**ASCIi**|**BINary**}  
     **WAVfrm**: {**ASCIi**|**BINary**}  
**ENV** {**ON**|**OFF**}

EVENT?

FEOi

(Set-only)

FFT <link>: <arg>

FORMAT: {DBM|LINEar}

WINDOW: {BLACKman|BLHarris|HAMming|  
HANning|RECTangular|TRIangular}

FPANEL {ON|OFF}

FPSList?

FPSNum?

FPUdate {ALWays|EMPTy|NEVer}

## H - I

H1Bar, H2Bar <link>: <arg>

YCOord: <NRx>

YDiv: <NRx>

HISTogram {CLEar|<link>: <arg>}

C.WINBottom: <NRx>

C.WINLeft: <NRx>

C.WINRight: <NRx>

C.WINTop: <NRx>

D.WINBottom: <NRx>

D.WINLeft: <NRx>

D.WINRight: <NRx>

D.WINTop: <NRx>

? DATA (<curve data>)

HISTScaling: {LINEar|LOG10}

? NR.pt (<ui>)

TYPE: {HORiz|NONE|VERT}

HNumber <NR1>

HPGI <link>: <arg>

COLOR<ui>: <NRx>

COLOR: DEFaulT

FORMAT: {DRAft|HIRes|SCREen}

PORT: {CENTronics|GPib|RS232}

ID?

IDProbe?

INIT

(Set-only)

INPut {STO<ui>|<qstring>}

## J - L

JITter [<ui>]?

JITT.histpt?

JITTELevel?

JITTLocation {CROSS|MESial}

KBAssign {<link>: <arg>}

GRANularity: {COARse|FINE|MEDIUM}

LOWER: <NRx>

UPPER: <NRx>

LABAbs <link>: <arg>

PCTg: <NRx>

XCOord: <NRx>

YDiv: <NRx>

Label <link>: <arg>

DELEte: {ALL|FPS[<ui>]|<qstring>|STO[<ui>]|  
TRAcE[<ui>]} (Set-only)

DISPlay: {ON|OFF}

FPS<ui>: <qstring>

STO<ui>: <qstring>

TRAcE<ui>: <qstring>

LABRel <link>: <arg>

(Set-only)

PCTg: <NRx>

(Set-only)

XCOord: <NRx>

(Set-only)

YDiv: <NRx>

(Set-only)

LCAconstants <ui>:<NRx>

LMZone <NRx>

LONGform {ON|OFF}

LPLugin <qstring>

## M

MAINPos <NRx>

MASK<ui> {DELEte|<link>:<arg>}

C.Points:<xcoord>,<ycoord>[,<xcoord>,<ycoord>...]

D.Points:<xcoord>,<ycoord>[,<xcoord>,<ycoord>...]

? NCount (<ui>)

? NR.pt (<ui>)

MASKStat {CLEAr|<link>:<arg>}

COUNT: {OFF|ON}

? NWfm (<ui>)

? TOTal (<ui>)

MCAconstants <ui>:<NRx>

MEAS?

<meas>?

<meas> ::= ({AMPLitude|CROSS|DELAY|DUTy|EXTinction|FALtime|FREq|JITter|GAIN|MAX|MEAN|MID|MIN|NOise|OVERshoot|PDElay|PERiod|PHASE|PP|RISetime|RMS|SFrequency|SKEW|SMagnitude|THD|TTRig|UNDershoot|WIDTH|YTEnergy|YTMns\_area|YTPIs\_area})

MEDge

MENTouch?

MENU<Id> <link>:<arg>

ATTach: {NONE|<ui>}

LABel: <qstring>

MODE: {HIGHlight|OFF|SElect|UNSElect}

POPPos: {DEFAult|<ui>}

MESial <NRx>

MHLimit <meas>[<ui>]:<NRx>

MLevel {ABSOLute|BASEDelta|RELative|TOPDelta}

MLLimit <meas>[<ui>]:<NRx>

MSCount <NRx>

MSList {EMPTy|<meas>[<ui>][,<meas>[<ui>]...]}

MSLOpe {PLUS|MINUs}

MS<meas>[<ui>]?

MSNum?

MStat?

MSYs {ON|OFF}

MStat?

MTime {ABSOLute|RELative}

MTRack {BASeline|BOTH|ON|OFF|TOPline}

## N - O

NAVg <NRx>

NEDge

NENV <NRx>

NGRAded <NRx>

NHIST.pt <NRx>

NMAsk! <NRx>

NOIS.histpt?

NOISLocation {BASeline|TOPline}

NVRam?

NWAVfirm <NRx>

OUTput {STO<ui>|TRAcce<ui>|<qstring>}

PATH {ON|OFF}

PfResult?

PfTest {OFF|ON}

PIN8; PIN24 <link>:<arg>

FORMat: {DRAft|HIRes|REDuced}

PORT: {CENTRONics|GPIb|RS232}

PINdex <ui>

PIVersion?

POWERon?

PROBe {NT|NTAuto|SETSeq}

PROXimal <NRx>

PZMode <link>:<arg>

MULTitracce: {ON|OFF}

PIVOT: {CENTer|LEFT|RIGHT|TRIGGER}

RCAIconstants <ui>:<NRx>

RECall {FPNext|FPS<ui>|<qstring>} (Set-only)

REFLevel <NRx>

REFset <link>:<arg>

CURRENT: <meas>[<ui>] (Set-only)

<meas>[<ui>]: <NRx>

REFTrace TRAcce<ui>

REMOve {ALL|<qstring>|TRAcce<ui>} (Set-only)

RMZone <NRx>

RPLugin <qstring>

RQS {ON|OFF}

RS232 <link>:<arg>

BAUD: <NRx>

DELAY: <NRx>

ECHO: {ON|OFF}

EOL: {CR|CRLF|LF|LFCr}

FLAGging: {SOFT|HARD|OFF}

PARity: {ODD|EVEN|NONE}

STOPBits: <NRx>

VERBoSe: {ON|OFF}

SElect {TRAcce<ui>|<qstring>}

SELFcal {FORce|<link>:<arg>}

MODE: {AUTO|MANual}

SET

SET?

SETSeq {ON|OFF}

SHILO

SMODE {HARmonic|PEAK}

SNRatio <NRx>

SPEaker {ON|OFF}

SRQMask <link>:<arg>

ABStouch: {ON|OFF}

CALDue: {ON|OFF}

CMDerr: {ON|OFF}

EXErr: {ON|OFF}

EXWarn:{ON|OFF}  
 IDProbe:{ON|OFF}  
 INErr:{ON|OFF}  
 INWarn:{ON|OFF}  
 OPCmpl:{ON|OFF}  
 MENTouch:{OFF|ON}  
 USER:{ON|OFF}  
 STATHist? [{HIST.pt|MEAN|NWFm|PP|RMSDev|  
 SIGMA1|SIGMA2|SIGMA3}]  
 STATistics {ON|OFF}  
 STByte?  
 STOList?  
 STONum?  
 STORE {FPS<ui>|<link>:<arg>} (Set-only)  
 TRACE<ui>:{STO<ui>|<qstring>}  
 <qstring>:STO<ui>  
 SUB<id><ui><link>:<arg>  
 LABEL:<qstring>  
 MODE:{HIGHLIGHT|OFF|ON|SELECT|UNSELECT}  
 TYPE:{BOX|RULE|TEXT}  
 X:<ui>  
 XLEN:<ui>  
 Y:<ui>  
 YLEN:<ui>  
 SUBLEN<id>?

## T

TBMain; TBWin <link>:<arg>  
 LENGTH:<NRx>  
 TIME:<NRx>  
 ?XINcr (<NR3>)  
 TEK4692 <link>:<arg>  
 COLOR{ :DEFAULT|<ui>:<NRx>}  
 DIRECTION:{HORIZ|VERT}  
 FORMAT:{DITHERED|DRAFT|HIRES|SCREEN}  
 PORT:{CENTRONICS|GPIB|RS232}  
 TEK4696; TEK4697 <link>:<arg>  
 COLOR{ :DEFAULT|<ui>:<NRx>}  
 DIRECTION:{HORIZ|VERT}  
 FORMAT:{DITHERED|DRAFT|HIRES|REDUCED|SCREEN}  
 PORT:{CENTRONICS|GPIB|RS232}  
 TEST [XTNd] (Set-only)  
 TEXT {CLEAR|<link>:<arg>} (Set-only)  
 STRING:<qstring>  
 X:<ui>  
 Y:<ui>  
 THD[<ui>]?  
 TIME <qstring> = "<hh>:<mm>:<ss>"  
 TOPLINE <NRx>  
 TR?  
 TRACE<ui><link>:<arg>  
 ACCUMULATE:{ON|OFF}  
 ?ACSstate ({ENHANCED|NENHANCED})  
 DESCRIPTION:<qstring>  
 GRLOCATION:{UPPER|LOWER}  
 GRType:{LINEAR}  
 ?WFMCalc ({FAST|HIPREC})  
 ?XUNIT ({AMPS|DBM|DEGREES|DIVS|HERTZ|OHMS|  
 SECONDS|VOLTS|WATTS})  
 ?YUNIT ({AMPS|DBM|DEGREES|DIVS|HERTZ|OHMS|  
 SECONDS|VOLTS|WATTS})  
 TRACE[<ui>]?  
 TRANUM?  
 TRMain <link>:<arg>

ALevel: <NRx>  
 ANLevel: <NRx>, {VOLts|DIVS}  
 COUpling: {AC|ACLf|ACHf|ACNoise|DC|DCHf|  
           DCNoise|HlBW}  
 MODE: {AUTO|AUTOLevel|NORmal}  
 SLOpe: {PLUs|MINUs}  
 SOUrcE: <qstring>  
 ? STaTus ({TRG|NOTrg})  
 TIHoldoff: <NRx>

TRWin <link>: <arg>  
 ALevel: <NRx>  
 COUpling: {AC|ACLf|ACHf|ACNoise|DC|DCHf|  
           DCNoise|HlBW}  
 EVHoldoff: <NRx>  
 MODE: {AUTOLevel|NORmal}  
 NLevel: <NRx>, {VOLts|DIVS}  
 SLOpe: {PLUs|MINUs}  
 SOUrcE: <qstring>  
 ? STaTus ({TRG|NOTrg})  
 TIHoldoff: <NRx>

TTAverage <NRx>

TTRlg[ <ui> ]?

## U-V

UID <link>: <arg>  
 CENter: <qstring>  
 LEfT: <qstring>  
 MAIn: <qstring>  
 RIghT: <qstring>

UNDEF { <qstring> | ALL }

(Set-only)

UPTime?

V1Bar, V2Bar <link>: <arg>

XCOord: <NRx>

XDiv: <NRx>

## W

WAVfrm?

WFMpre <link>: <arg>

ACState: {ENHanced|NENhanced}

? BIT/nr (16)

? BN.fmt (Rl)

? BYT/nr (2)

? BYT.or ({LSB|MSB})

? CRVchk ({CHKsm0|NONE|NUL})

DATE: <qstring>

? ENCdg ({ASCIi|BINary})

LABel: <qstring>

NR.pt {512|1024|2048|4096|5120|8192|10240}

? PT.fmt ({ENV|Y|XY})

TIME: <qstring>

? WFId ({STO <ui> | TRAcE <ui> })

XINcr: <NRx>

? XMUlt (<NR3>)

? XUNit ({AMPS|DBM|DEGrees|DIVS|HERtz|  
          OHMs|SEConds|VOLts|WATts})

XZErO: <NRx>

YMUlt <NRx>

YUNit {AMPS|DBM|DEGrees|DIVS|HERtz|  
          OHMs|SEConds|VOLts|WATts}

YZErO: <NRx>

WFMScaling {FORCe|OPTional}

WIN1Pos <NRx>

WIN2Pos <NRx>

WTMode {MAIn|EVHoldoff|TIHoldoff}

# Tektronix 11402A/11403A Functional Command Summary

< >	::= Defined item
{ }	::= One item from group required
[ ]	::= Optional item(s)
( )	::= Response to a query
	::= Exclusive or
FPS	::= Front Panel Setting
<NR1>	::= Signed integer
<NR2>	::= Floating point, no exponent
<NR3>	::= Floating point with exponent
<NRx>	::= { <NR1>   <NR2>   <NR3> }
<ui>	::= Unsigned integer
<curve data>	::= Tek Codes&Formats binary block data (<bblock>) or ASCII data points (<NR1>[{,<NR1>}...])
<qstring>	::= Quoted string
?	::= Query-only header or link

HEAders	Header, link, or argument; minimum spelling in CAPs; links followed by :
RESponses	Query response; minimum spelling in CAPs

Commands are set/query unless otherwise noted. Query-only headers are followed by a ?. Query-only links are indicated with a leading ?; the argument(s) in parentheses after the colon show the response form. (Note: Do not enter the colon when querying a link.)

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## Acquisition Commands

**AUTOSet** [<link>:]<arg>  
**HORiz:** {EDGE|OFF|PERiod|PULse}  
**START**  
**UNDO** (Set-only)  
**VERT:** {ECL|PP|TTL|OFF} (Set-only)  
**AVG** {ON|OFF}  
**CONDacq** <link>:<arg>  
**FILE:** <NRx>  
**? REMAining** (<NR1>)  
**TYPE:** {AVG|BOTH|CONTInuous|ENV|FILE|GRADed|HIST.pt|MASK[<ui>]SINGLE}  
**DIGitizer** {RUN|STOP}  
**ENV** {ON|OFF}  
**FFT** <link>:<arg>  
**FORMat:** {DBM|LINEar}  
**WINDow:** {BLAckman|BLHarris|HAMming|HANning|RECTangular|TRIAngular}  
**NAVg** <NRx>  
**NENV** <NRx>  
**NGRADed** <NRx>  
**NHIST.pt** <NRx>  
**NMAsk** <NRx>  
**NWAVfrm** <NRx>



## Calibration Commands

CALProbe <link>:<arg>  
FUL: <slot> <ui>  
SHOrt: <slot> <ui>  
CALStatus?  
CCAlconstants <ui>:<NRx>  
LCAIconstants <ui>:<NRx>  
MCAIconstants <ui>:<NRx>  
RCAIconstants <ui>:<NRx>  
SELFOal {FORce|<link>:<arg>}  
MODE: {AUTO|MANual}

## Channel/Vertical Commands

CH <slot> <ui> <link>:<arg>  
AMPoffset: <NRx>  
BW: <NRx>  
BWHI: <NRx>  
BWLO: <NRx>  
COUpling: {AC|DC|OFF|VC}  
IMPedance: <NRx>  
MNSCoupling: {AC|DC|VC|OFF}  
MNSOffset: <NRx>  
? MNSProbe (<qstring>)  
OFFSet: <NRx>  
PLSCoupling: {AC|DC|VC|OFF}  
PLSOffset: <NRx>  
? PLSProbe (<qstring>)  
? PROBE (<qstring>)  
PROTect: {ON|OFF}  
SENSitivity: <NRx>  
? UNIts (<qstring>)  
VCOffset: <NRx>  
CPLugin <qstring>  
LPLugin <qstring>  
RPLugin <qstring>

## Cursor Commands

CURSOr <link>:<arg>  
READout: {ON|OFF}  
REFerence: TRAcE<ui>  
TYPE: {HBArS|PAIred|SPLit|VBArS}  
? XUNit ({AMPs|DIVS|DEGrees|DBM|HERtz|  
OHMs|SECOnds|VOLts|WATts})  
? YUNit ({AMPs|DIVS|DEGrees|DBM|HERtz|  
OHMs|SECOnds|VOLts|WATts})  
DOT1Abs; DOT2Abs <link>:<arg>  
PCTg: <NRx>  
XCOord: <NRx>  
XDiv: <NRx>  
? XQual ({EQ|LT|GT|UN})  
? YCOord (<NR3>)  
? YDiv (<NR3>)  
? YQual ({EQ|LT|GT|UN})  
DOT1Rel; DOT2Rel <link>:<arg> (Set-only)  
PCTg: <NRx>  
XCOord: <NRx>  
XDiv: <NRx>  
H1Bar; H2Bar <link>:<arg>  
YCOord: <NRx>  
YDiv: <NRx>  
V1Bar; V2Bar <link>:<arg>  
XCOord: <NRx>  
XDiv: <NRx>

## Data Transfer Commands

ABBwfmpre {ON|OFF}  
BYT.or {LSB|MSB}  
CURVe <curve data>  
ENCdg <link>:<arg>  
    DISPlay: {ASCIi|BINary}  
    HISTogram: {ASCIi|BINary}  
    SET: {ASCIi|BINary}  
    WAVfrm: {ASCIi|BINary}  
HISTogram {CLEAr|<link>:<arg>}  
    C.WINBottom: <NRx>  
    C.WINLeft: <NRx>  
    C.WINRight: <NRx>  
    C.WINTop: <NRx>  
    D.WINBottom: <NRx>  
    D.WINLeft: <NRx>  
    D.WINRight: <NRx>  
    D.WINTop: <NRx>  
    ? DATA (<curve data>)  
    HISTScaling: {LINEar|LOG10}  
    ? NR.pt (<ui>)  
    TYPe: {HORiz|NONE|VERT}  
INPUt {STO<ui>|<qstring>}  
OUTPUt {STO<ui>|TRAcE<ui>|<qstring>}  
SET <bblock>  
SET?  
WAVfrm?  
WFMpre <link>:<arg>  
    ACState: {ENHanced|NENhanced}  
    ? BIT/nr (16)  
    ? BN.fmt (RI)  
    ? BYT/nr (2)  
    ? BYT.or ({LSB|MSB})  
    ? CRVchk ({CHKsm0|NONE|NULL})  
    DATE: <qstring>  
    ? ENCdg ({ASCIi|BINary})  
    Label: <qstring>  
    NR.pt: {512|1024|2048|4096|5120|8192|10240}  
    ? PT.fmt ({ENV|Y|XY})  
    TIME: <qstring>  
    ? WFId ({STO<ui>|TRAcE<ui>})  
    XINcr: <NRx>  
    ? XMUlt (<NR3>)  
    ? XUNit ({AMPS|DBM|DEGrees|DIVS|HERtz|  
        OHMs|SECOnds|VOLts|WATts})  
    XZErO: <NRx>  
    YMUlt: <NRx>  
    YUNit: {AMPS|DBM|DEGrees|DIVS|HERtz|  
        OHMs|SECOnds|VOLts|WATts}  
    YZErO: <NRx>

## Diagnostic Commands

DIAG?  
TEST [XTNd] (Set-only)

## Display and Color Commands

BELL  
COLor<ui> <link>:<arg>  
    DEFAUlt  
    HUE: <NRx>  
    LIGHtness: <NRx>  
    SATuration: <NRx>  
COLor DEFAUlt

**DISPlay** <link>:<arg>  
 C.WINBottom: <NRx>  
 C.WINLeft: <NRx>  
 C.WINRight: <NRx>  
 C.WINTop: <NRx>  
 D.WINBottom: <NRx>  
 D.WINLeft: <NRx>  
 D.WINRight: <NRx>  
 D.WINTop: <NRx>  
 ? DATA (<curve data>)  
 GRADFirst: {ON|OFF}  
 ? GRADScale (<ui>)  
 GRaticule: {DUAL|SINGLE}  
 INTENsity: <NRx>  
 MODE: {DOTs|VECTors}  
 ? NR.PT (<ui>)  
 PERSistence: <NRx>  
 REFREsh: <NRx>  
 STATistics: {HISTogram|MASK}  
 TYPE: {GRADEd|INFinite|NORMal|VARIABLE}  
 ? XSize (<ui>)  
 ? YSize (<ui>)  
**HISTogram** {CLEar|<link>:<arg>}  
 C.WINBottom: <NRx>  
 C.WINLeft: <NRx>  
 C.WINRight: <NRx>  
 C.WINTop: <NRx>  
 D.WINBottom: <NRx>  
 D.WINLeft: <NRx>  
 D.WINRight: <NRx>  
 D.WINTop: <NRx>  
 ? DATA (<curve data>)  
 HISTScaling: {LINEar|LOG10}  
 ? NR.pt (<ui>)  
 TYPE: {HORiz|NONE|VERT}  
**KBAssign** {<link>:<arg>}  
 GRANularity: {COARse|FINE|MEDIUM}  
 LOWER: <NRx>  
 UPPER: <NRx>  
**MENTouch?**  
**MENU** <id> <link>:<arg>  
 ATTach: {NONE|<ui>}  
 LABEL: <qstring>  
 MODE: {HIGHlight|OFF|SElect|UNSElect}  
 POPPos: {DEFAULT|<ui>}  
**STATHist?** [{HIST.pt|MEAN|NWFm|PP|RMSDev|  
 SIGMA1|SIGMA2|SIGMA3}]  
**SUB** <id> <ui> <link>:<arg>  
 LABEL: <qstring>  
 MODE: {HIGHlight|OFF|ON|SElect|UNSElect}  
 TYPE: {BOX|RULE|TEXT}  
 X: <ui>  
 XLEN: <ui>  
 Y: <ui>  
 YLEN: <ui>  
**SUBLEN** <id>?

## External I/O Commands

**ALTinkjet** <link>:<arg>  
 DIRection: {HORiz|VERT}  
 FORMat: {DRAft|HIREs|REDUced}  
 PORT: {CENTronics|GPib|RS232}  
**BITMap** <link>:<arg>  
 DATACompress: {ON|OFF}  
 DATAFormat: {BINary|BINHex}  
 DIRection: {HORiz|VERT}  
 FORMat: {DITHERed|DRAft|HIREs|REDUced|SCREen}  
 PORT: {CENTronics|GPib|RS232}

## External I/O Commands (Cont.)

**COPY** [*<link>*]:*<arg>*  
     **ABORT** (Set-only)  
     **FORMAT**: {DIThered|DRAft|HIRes|REDuced|SCReen}  
     **PRINTER**: {ALTinkjet|BITMap|HPGI|PIN8|PIN24|TEK4692|TEK4696|TEK4697}  
     **START** (Set-only)  
**DEBUg** *<link>*:*<arg>*  
     **GPib**: {ON|OFF}  
     **RS232**: {ON|OFF}  
**HPGI** *<link>*:*<arg>*  
     **COLOR***<ui>*:*NRx*  
     **COLOR**: DEFAULT  
     **FORMAT**: {DRAft|HIRes|SCReen}  
     **PORT**: {CENTronics|GPib|RS232}  
**PIN8; PIN24** *<link>*:*<arg>*  
     **FORMAT**: {DRAft|HIRes|REDuced}  
     **PORT**: {CENTronics|GPib|RS232}  
**RS232** *<link>*:*<arg>*  
     **BAUD**:*<NRx>*  
     **DELAY**:*<NRx>*  
     **ECHO**: {ON|OFF}  
     **EOL**: {CR | CRLf | LF | LFCr}  
     **FLAGging**: {SOFT|HARD|OFF}  
     **PARity**: {ODD|EVEN|NONE}  
     **STOPBits**:*<NRx>*  
     **VERBoSe**: {ON|OFF}  
**TEK4692** *<link>*:*<arg>*  
     **COLOR***<ui>*:*<NRx>*  
     **COLOR**: DEFAULT  
     **DIREction**: {HORiz|VERT}  
     **FORMAT**: {DIThered|DRAft|HIRes|SCReen}  
     **PORT**: {CENTronics|GPib|RS232}  
**TEK4696; TEK4697** *<link>*:*<arg>*  
     **COLOR***<ui>*:*NRx*  
     **COLOR**: DEFAULT  
     **DIREction**: {HORiz|VERT}  
     **FORMAT**: {DIThered|DRAft|HIRes|REDuced|SCReen}  
     **PORT**: {CENTronics|GPib|RS232}

## Label and Text Commands

**LABABS** *<link>*:*<arg>*  
     **PCTg**:*<NRx>*  
     **XCOORD**:*<NRx>*  
     **YDIV**:*<NRx>*  
**LABel** *<link>*:*<arg>*  
     **DELEte**: {ALL|FPS[*<ui>*]] *<qstring>* | STO[*<ui>*]]  
         TRACE[*<ui>*]] (Set-only)  
     **DISPlay**: {ON|OFF}  
     **FPS***<ui>*:*<qstring>*  
     **STO***<ui>*:*<qstring>*  
     **TRAcE***<ui>*:*<qstring>*  
**LABREL** *<link>*:*<arg>* (Set-only)  
     **PCTg**:*<NRx>*  
     **XCOORD**:*<NRx>*  
     **YDIV**:*<NRx>*  
**TEXT** {CLEAr|*<link>*:*<arg>*} (Set-only)  
     **STRing**:*<qstring>* (Set-only)  
     **X**:*<ui>*  
     **Y**:*<ui>*

## Measurement Commands

**BASeline** *<NRx>*  
**COMpare** {ON|OFF}

DAInt {WHOLE | SINGLE}  
 DISPersion {PP | RMSDev}  
 DISTal <NRx>  
 DLYtrace TRAcE <ui>  
 HNUmber <NR1>  
 JITT.histpt?  
 JITTLEvel?  
 JITTLocation {CROSS | MESial}  
 LMZone <NRx>  
 MEAS?  
 <meas> ?  
 <meas> ::= ({AMPLitude | CROSS | DELAY | DUTY |  
 EXTInction | FALtime | FREq | JITTER | GAIN | MAX |  
 MEAN | MID | MIN | NOISE | OVERshoot | PDElay |  
 PERIOD | PHASE | PP | RISEtime | RMS | SFREquency |  
 SKEW | SMagnitude | THD | TTRig | UNDershoot |  
 WIDTH | YTEnergy | YTMns\_area | YTPis\_area})  
 MEDge  
 MESial <NRx>  
 MLEvel {ABSOLute | BASEDelta | RELative | TOPDelta}  
 MHLimit <meas> [<ui>]: <NRx>  
 MLEvel {ABSOLute | BASEDelta | RELative | TOPDelta}  
 MLLimit <meas> [<ui>]: <NRx>  
 MSCount <NRx>  
 MSList {EMPTY | <meas> [<ui>] [ , <meas> [<ui>] ... ]}  
 MSLOpe {PLUS | MINUS}  
 MS <meas> ?  
 MSNum?  
 MStat?  
 MSys {ON | OFF}  
 MTIme {ABSOLute | RELative}  
 MTRack {BASeline | BOTH | OFF | ON | TOPline}  
 NEDGE  
 NOIS.histpt?  
 NOISLocation {BASeline | TOPline}  
 PFResult?  
 PFTest {OFF | ON}  
 PINdex <ui>  
 PROXimal <NRx>  
 REFLevel <NRx>  
 REFset <link>: <arg>  
 CURRENT: <meas> [<ui>] (Set-only)  
 <meas> [<ui>]: <NRx>  
 REFTrace TRAcE <ui>  
 RMZone <NRx>  
 SHILO  
 SMOde {HARmonic | PEAK}  
 SNRatio <NRx>  
 STATistics {ON | OFF}  
 TOPline <NRx>  
 TTAverage <NRx>

## Miscellaneous/System Commands

ABStouch {CLEAR | <NRx> , <NRx>}  
 DATE <qstring> = "<dd> - <mon> - <yy>"  
 DEF <qstring> , <qstring> (Set-only)  
 DSYmenu [<link>:] <arg>  
 {ALL Wavfrm | CURSor | DISPlay | EXTFeatures |  
 MEAS | STORE Recall | TRIGGER | UTILITY1 |  
 UTILITY2 | WAVfrm | <link>: <arg>}  
 EXTMenu: {MENU <id> | NONE}

FEOI (Set-only)  
 FPAnel {ON|OFF}  
 FPUdate {ALWays|EMPTy|NEVer}  
 INIt (Set-only)  
 LONGform {ON|OFF}  
 PATH {ON|OFF}  
 POWERon?  
 PROBE {NT|NTAuto|SETSeq}  
 SPEaker {ON|OFF}  
 TIME <qstring> = "<hh>:<mm>:<ss>"  
 UNDEF {<qstring>|ALL} (Set-only)  
 UPTime?

## Status and Event Commands

CONFig?  
 EVENT?  
 ID?  
 IDProbe?  
 PIVersion?  
 RQS {ON|OFF}  
 SRQMask <link>:<arg>  
   ABStouch: {ON|OFF}  
   CALDue: {ON|OFF}  
   CMDerr: {ON|OFF}  
   EXErr: {ON|OFF}  
   EXWarn: {ON|OFF}  
   IDProbe: {ON|OFF}  
   INErr: {ON|OFF}  
   INWarn: {ON|OFF}  
   MENTouch: {ON|OFF}  
   OPCmpl: {ON|OFF}  
   USER: {ON|OFF}  
 STByte?  
 UID <link>:<arg>  
   CENter: <qstring>  
   LEFt: <qstring>  
   MAIn: <qstring>  
   RIght: <qstring>

## Time Base/Horizontal Commands

MAINPos <NRx>  
 TBMain; TBWin <link>:<arg>  
   LENGth: <NRx>  
   TIME: <NRx>  
   ? XINcr (<NR3>)  
 WIN1Pos <NRx>  
 WIN2Pos <NRx>

## Triggering Commands

TR?  
 TRMain <link>:<arg>  
   ALEvel: <NRx>  
   ANLevel: <NRx>, {VOLts|DIVS}  
   COUpling: {AC|ACLf|ACHf|ACNoise|DC|DCHf|  
               DCNoise|Hlbw}  
   MODE: {AUTO|AUTOLevel|NORmal}  
   SLOpe: {PLUs|MINUs}  
   SOURce: <qstring>  
   ? STATus ({TRG|NOTrg})  
   TIHoldoff: <NRx>  
 TRWin <link>:<arg>  
   ALEvel: <NRx>

# Escape Character Set

Bits								
B8 B7 B6 B5	1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
B4 B3 B2 B1	0 0 0 0	0 0 0 1	0 0 1 0	0 0 1 1	0 1 0 0	0 1 0 1	0 1 1 0	0 1 1 1
0 0 0 0	Ä	Å	Ä	Ä	Ä	Ä	Ä	Ä
0 0 0 1	ä	ä	ä	ä	ä	ä	ä	ä
0 0 1 0	Ö	ö	ö	ö	ö	ö	ö	ö
0 0 1 1	ö	ö	ö	ö	ö	ö	ö	ö
0 1 0 0	Ü	ü	ü	ü	ü	ü	ü	ü
0 1 0 1	ü	ü	ü	ü	ü	ü	ü	ü
0 1 1 0	à	á	â	ã	ä	å	æ	ç
0 1 1 1	è	é	ê	ë	ì	í	î	ï
1 0 0 0	á	ä	å	æ	ç	è	é	ê
1 0 0 1	é	é	é	é	é	é	é	é
1 0 1 0	Ä	Ä	Ä	Ä	Ä	Ä	Ä	Ä
1 0 1 1	ä	ä	ä	ä	ä	ä	ä	ä
1 1 0 0	Æ	æ	æ	æ	æ	æ	æ	æ
1 1 0 1	æ	æ	æ	æ	æ	æ	æ	æ
1 1 1 0	ç	ç	ç	ç	ç	ç	ç	ç
1 1 1 1	ç	ç	ç	ç	ç	ç	ç	ç

## Key

Octal 17  
Hex F  
Decimal 15

Escape character